

**WHAT IS CLAIMED IS:**

1. A photonic network node comprising:  
means for demultiplexing an optical signal into channels;  
5 photonic switch fabric;  
means for monitoring before and after the photonic switch fabric;  
means for protecting channels responsive to the monitoring means;  
means for compensating for channel impairment responsive to the  
monitoring means; and  
10 means for multiplexing a plurality of channels into an optical.
2. A node as claimed in claim 1 wherein the photonic switch fabric includes  
a plurality of optical switch planes.
- 15 3. A node as claimed in claim 1 wherein the means for demultiplexing  
includes an 1:M demultiplexer.
4. A node as claimed in claim 1 wherein the means for monitoring includes  
fast line scanners.
- 20 5. A node as claimed in claim 4 wherein the fast line scanners couple prior  
to the means for demultiplexing.
6. A node as claimed in claim 4 wherein the fast line scanners couple after  
25 the means for multiplexing.
7. A node as claimed in claim 1 wherein the means for monitoring includes  
slow line scanners.
- 30 8. A node as claimed in claim 4 wherein the slow line scanners couple prior  
to the means for demultiplexing.
9. A node as claimed in claim 4 wherein the slow line scanners couple after  
the means for multiplexing.
- 35 10. A node as claimed in claim 1 wherein the means for monitoring includes  
wrapper readers.

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11. A node as claimed in claim 1 wherein the means for monitoring includes channels performance monitors.

5 12. A node as claimed in claim 1 wherein the means for multiplexing includes an M:1 multiplexer.

13. A photonic node for multi-vendor and multi-carrier interworking comprising means for performance monitoring; and  
10 means for impairment compensating coupled thereto.

14. A photonic node as claimed in claim 13 wherein the means for monitoring supports network wide performance and fault management, and the triggering of network wide protection and restoration options.  
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15. A photonic node as claimed in claim 13 wherein the means for monitoring includes means for triggering of network wide protection and restoration.

16. A photonic node as claimed in claim 13 wherein the means for monitoring includes means for detecting and isolating photonic node specific faults and mis-connects, and means for triggering protection switching to redundant modules when appropriate.  
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17. A photonic node as claimed in claim 13 wherein the means for monitoring includes photonic node output channel power level compensation responsive thereto.  
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18. A photonic node as claimed in claim 13 wherein the means for monitoring includes photonic node output channel dispersion compensation responsive thereto.  
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19. A photonic node as claimed in claim 13 further comprising means for interfacing with electrical signaling network nodes.